

WHAT IS CLAIMED IS:

1. A method comprising:
receiving a mask pattern;
deconstructing at least a portion of the mask pattern
into a plurality of primitives;
retrieving corrections corresponding to the primitives
from a library, said corrections having been generated using a
rigorous method and including edge corrections and at least
one of corner corrections, space corrections, shape
corrections, and edge-to-edge corrections; and
applying the retrieved corrections to the primitives to
synthesize a near-field corresponding to said at least a
portion of the mask pattern.
2. The method of claim 1, further comprising:
simulating a printed pattern corresponding to said at least a
portion of the mask pattern using the synthesized near-field.
3. The method of claim 2, further comprising:
comparing the simulated printed pattern to a desired
printed pattern.

4. The method of claim 3, further comprising:

modifying the mask pattern in response to the simulated printed pattern substantially deviating from said desired printed pattern.

5. The method of claim 2, further comprising:

inspecting a mask including said at least a portion of the mask pattern by comparing the simulated printed pattern with a printed pattern generated using said mask.

6. The method of claim 1, wherein said receiving a mask pattern includes receiving a plurality of features, said receiving a plurality of features including receiving features smaller than a wavelength of light with which the mask is to be illuminated.

7. The method of claim 1, wherein said applying the retrieved corrections to the primitives comprises applying the retrieved corrections to the primitives using a fast method.

8. The method of claim 1, wherein said applying the retrieved corrections to the primitives comprises:

constructing a geometric field corresponding to said at least a portion of the mask pattern;

adding edge corrections to the geometric field; and

adding corner corrections to the geometric field.

9. The method of claim 1, wherein said applying the retrieved corrections to the primitives comprises:

constructing a geometric field corresponding to said at least a portion of the mask pattern;

adding edge corrections to the geometric field; and

adding edge-to-edge interaction corrections to the geometric field.

10. The method of claim 9, wherein said applying the retrieved corrections to the primitives further comprises adding corner corrections to the geometric field.

11. An apparatus comprising:

a mask deconstructor to deconstruct at least a portion of a mask pattern into a plurality of primitives;

a library of corrections including a plurality of corrections having been generated using a rigorous method, said plurality of corrections including edge corrections and at least one of corner corrections, space corrections, shape corrections, and edge-to-edge corrections; and

an electromagnetic field synthesizer configured to apply the retrieved corrections to the primitives to synthesize a near-field corresponding to said at least a portion of the mask.

12. The apparatus of claim 11, further comprising:

a feature calculator to simulate a printed pattern corresponding to said at least a portion of the mask pattern using the synthesized near-field.

13. The apparatus of claim 12, further comprising:

a feature comparator to compare the simulated printed pattern to a desired printed pattern.

14. The apparatus of claim 13, further comprising:

a mask manipulator to modify the mask pattern in response to the simulated printed pattern substantially deviating from said desired printed pattern.

15. The apparatus of claim 12, further comprising:

a mask inspector to inspect a mask including said at least a portion of the mask pattern by comparing the simulated printed pattern with a printed pattern generated using said mask.

16. The apparatus of claim 11, wherein the mask pattern includes a plurality of features, said features including features smaller than a wavelength of light with which the mask is to be illuminated.

17. The apparatus of claim 11, wherein said electromagnetic field synthesizer is further configured to apply the retrieved corrections to the primitives using a fast method.

18. The apparatus of claim 11, wherein said electromagnetic field synthesizer is further configured to: construct a geometric field corresponding to said at least a portion of the mask pattern;

add edge corrections to the geometric field; and
add corner corrections to the geometric field.

19. The apparatus of claim 11, wherein said
electromagnetic field synthesizer is further configured to:
construct a geometric field corresponding to said at
least a portion of the mask pattern;
add edge corrections to the geometric field; and
add edge-to-edge interaction corrections to the geometric
field.

20. The apparatus of claim 19, wherein said
electromagnetic field synthesizer is further configured to add
corner corrections to the geometric field.

21. An article comprising a machine-readable medium including machine-executable instructions, the instructions operative to cause one or more machines to:

- receive a mask pattern;
- deconstruct at least a portion of the mask pattern into a plurality of primitives;
- retrieve corrections corresponding to the primitives from a library, said corrections having been generated using a rigorous method and including edge corrections and at least one of corner corrections, space corrections, shape corrections, and edge-to-edge corrections; and
- apply the retrieved corrections to the primitives to synthesize a near-field corresponding to said at least a portion of the mask pattern.

22. The article of claim 21, wherein the instructions are further operative to cause the one or more machines to:

- simulate a printed pattern corresponding to said at least a portion of the mask pattern using the synthesized near-field.

23. The article of claim 22, wherein the instructions are further operative to cause the one or more machines to

compare the simulated printed pattern to a desired printed pattern.

24. The article of claim 3, wherein the instructions are further operative to cause the one or more machines to modify the mask pattern in response to the simulated printed pattern substantially deviating from said desired printed pattern.

25. The article of claim 22, wherein the instructions are further operative to cause the one or more machines to inspect a mask including said at least a portion of the mask pattern by comparing the simulated printed pattern with a printed pattern generated using said mask.

26. The article of claim 21, wherein the mask pattern includes a plurality of features, said features including features smaller than a wavelength of light with which the mask is to be illuminated.

27. The article of claim 21, wherein the instructions that are operative to cause the one or more machines to apply the retrieved corrections to the primitives comprise instructions that are operative to cause one or more machines

to apply the retrieved corrections to the primitives using a fast method.

28. The article of claim 21, wherein the instructions that are operative to cause the one or more machines to apply the retrieved corrections to the primitives comprise instructions that are operative to cause the one or more machines to:

construct a geometric field corresponding to said at least a portion of the mask pattern;

add edge corrections to the geometric field; and

add corner corrections to the geometric field.

29. The article of claim 21, wherein the instructions that are operative to cause the one or more machines to apply the retrieved corrections to the primitives comprise instructions that are operative to cause the one or more machines to:

construct a geometric field corresponding to said at least a portion of the mask pattern;

add edge corrections to the geometric field; and

add edge-to-edge interaction corrections to the geometric field.

30. The article of claim 29, wherein the instructions that are operative to cause the one or more machines to apply the retrieved corrections to the primitives further comprise instructions that are operative to cause the one or more machines to add corner corrections to the geometric field.